

STAND FOR DISPLAY

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of Korean Patent Application No. 2002-66642, filed October 30, 2002, in the Korean Intellectual Property Office, the disclosure of which is incorporated herein by reference.

BACKGROUND OF THE INVENTION

Field of the Invention

[0002] The present invention relates to a stand for supporting a display that allows the display to be swiveled and elevated, and more particularly, to a stand for large-sized displays such as an LCD (Liquid Crystal Display) or a PDP (Plasma Display Panel), etc.

Description of the Related Art

[0003] Conventionally, there has been a stand that allows a display to be swiveled. This kind of conventional stand has mainly been used in lightweight small-sized stands employed for notebook computers or desktop computers. Japanese Patent Laid-Open No. 10-126068 disclosed a stand allowing the display to be swiveled. However, this type of stand cannot support heavy, large-sized displays.

[0004] Korean Patent Laid -Open No. 1997-14267 disclosed a stand allowing the display to be swiveled and elevated by a powered driving gear with the use of a handle for adjusting left and right angles, and a handle for adjusting elevation. But, this type of stand requires separate devices such as a plurality of driving gears and rack gears,

and also a chamber for receiving them, thus the supporting device is complicated in structure.

SUMMARY OF THE INVENTION

[0005] Accordingly, it is an aspect of the present invention to provide a stand for a display that is capable of supporting a display of substantial weight, and that allows the display to be swiveled and elevated, and additionally needs no separate device for swiveling and elevation change of the display.

[0006] Additional aspects and advantages of the invention will be set forth in part in the description which follows and, in part, will be obvious from the description, or may be learned by practice of the invention.

[0007] The foregoing and/or other aspects of the present invention are achieved by providing a stand having a base, a supporting case mounted on the base, a supporting member having first and second ends mounted inside the supporting case and having the second end seated on the base to bear the weight of the display, a rotating case that is rotatably combined with a first end of the supporting case, and a mounting bracket engaged with a first end of the rotating case, to engage the display.

[0008] According to one aspect, the base has a base plate with a seating part, the seating part having an engaging opening to engage the supporting case.

[0009] According to one aspect, the base plate of the base has an extending part extending from the base plate, to increase stability of the base, and a first cover and a second cover respectively disposed on opposite sides of the base plate.

[0010] According to one aspect, the supporting case has a supporting trunk part, which the supporting member passes through, and a supporting guide to guide the supporting member.

[0011] According to one aspect, the supporting case additionally has a supporting bracket with: a seating flange, on which the lower end of the supporting member is seated; a first engaging opening engaging the supporting trunk part of the supporting case; and a second engaging opening engaged with the seating part of the base. The supporting case also has first and second bracket covers covering portions of the supporting bracket, and the seating part of the base corresponds to the supporting bracket.

[0012] According to one aspect, the supporting trunk part has a pipe through which the supporting member passes.

[0013] According to one aspect, the supporting guide of the supporting case has a bent part extending from a guiding flange having a central bore, to guide the supporting member.

[0014] According to one aspect, the supporting member has a supporting shaft that passes through the supporting case, and a bracket-engaging part positioned on a first end of the supporting shaft, that engages the mounting bracket.

[0015] According to one aspect, the supporting member has a cylinder cover, a cylinder with a first end combined with the cylinder cover to translate along a common axis of the cylinder and the cylinder cover, and a cylinder part having a bracket-engaging part located on a second end of the cylinder.

[0016] According to one aspect, the mounting bracket has an engaging part with which the bracket-engaging part of the supporting member of the cylinder part is engaged, and an opening to which the display is mounted.

[0017] According to one aspect, the mounting bracket additionally has a cover.

[0018] According to one aspect, the rotating case additionally has: a trunk part, through which the supporting member passes; a projection part, projecting from an inner surface of the trunk part, and maintaining a predetermined separation between the inner surface of the trunk part and an outer surface of space to the supporting case; a bracket-inserting opening, located on a first end of the rotating case to engage the mounting bracket. The mounting bracket additionally has an inserting part to engage the bracket-inserting opening.

[0019] According to one aspect, the rotating case additionally has an inserting guide, having an external diameter corresponding to an internal diameter of the rotating case and an internal diameter corresponding to an external diameter of the supporting case to aid insertion of the supporting case into the rotating case.

[0020] According to one aspect, the trunk part of the rotating case additionally has a wire holder.

[0021] According to one aspect, the trunk part of the rotating case has a stopper that projects farther from the inner face of the trunk part, than the projection part, and the outer surface of the supporting trunk part of the supporting case has a recess of predetermined size, to receive the stopper and limit a rotation of the rotating case about the supporting case.

[0022] According to one aspect, the stand also has a display-mounting part having a display base plate with a first engaging hole to engage a mounting face of the mounting bracket, and first and second side engaging parts, positioned on opposing sides of the display base plate, and a second engaging opening to engage the display.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] These and/or other aspects and advantages of the present invention will become apparent and more readily appreciated from the following description of the embodiments, taken in conjunction with the accompanying drawings of which:

FIG. 1 is a combined perspective view of a stand according to the present invention;

FIG. 2 is an exploded perspective view of the stand of FIG. 1;

FIG. 3A is an exploded perspective view of a base 100 of the stand of FIG. 1;

FIG. 3B is an exploded perspective view of a supporting case 200 of the stand of FIG. 1;

FIG. 3C is an exploded perspective view of an rotating case 300 of the stand according to a second embodiment of the present invention;

FIG. 3D is an exploded perspective view of a supporting member 400 of the stand of FIG. 1;

FIG. 3E is an exploded perspective view of an mounting bracket 500 of the stand of FIG. 1;

FIG. 3F is an exploded perspective view of a cylinder part 600 of the display according to fourth fifth, and sixth embodiments of the present invention;

FIG. 3G is an exploded perspective view of a display-mounting part 700 of the stand according to a third embodiment of the present invention; and

FIG. 4 is a sectional view showing a combination of the supporting case 200 and the rotating case 300 of the stand according to the second embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0024] Reference will now be made in detail to embodiments of the present invention, examples of which are illustrated in the accompanying drawings, wherein like reference numerals refer to like elements throughout. The embodiments are described below in order to explain the present invention by referring to the figures.

[0025] A first embodiment of the stand includes a base 100, a supporting case 200, a supporting member 400 that can be swiveled, and an mounting bracket 500. As shown in FIGS. 1 and 2, a second embodiment of the stand includes a rotating case 300 in addition to the components of the first embodiment of the stand described above. According to a third embodiment, the stand includes a display-mounting part 700 in addition to the components of the second embodiment of the stand. The display-mounting part 700 mounts on the mounting bracket 500.

[0026] Further, substituting the cylinder part 600 (see FIG. 3G) for the supporting member 400 employed in the first, second, and third embodiments, creates respective fourth, fifth, and sixth embodiments. Detailed descriptions of each embodiment shall be made with reference to FIGS. 3A through 3G, respectively, which illustrate the components of the stand.

[0027] FIG. 3A is an exploded perspective view of the base 100 of the stand according to the first embodiment of the present invention. The base 100 includes a base plate 110, a seating part 120, and an engaging hole 130.

[0028] An extending part 111 is located on a first end of the base plate 110 to widen a contact area of the base 100, and thereby enhance stability. According to another aspect, first and second sides of the base plate 110 are covered by a first cover 113 and a second cover 115 respectively.

[0029] The seating part 120 located at a predetermined position on the base plate 110 corresponds in shape to the supporting case 200. Along the edge of the seating part 120, there are a plurality of engaging holes 130 for seating the supporting case 200.

[0030] As shown in FIG. 3B,. The supporting case 200 has a supporting trunk part 210 and a supporting guide 220. In the first embodiment, the supporting trunk part 210 may be circular or polygonal. However, in the second embodiment (to be described later), the rotating case 300 rotates, and thus the supporting trunk part 210 of the supporting case 200 corresponding thereto is approximately cylindrical.

[0031] According to one aspect, the supporting trunk part 210 has a penetrating pipe 211 through which the supporting member 400 passes. In the second and third embodiments, the supporting trunk part 210 additionally has a recess 213 accommodating a stopper 313 (see FIG. 3C) to limit rotation of the display.

[0032] The supporting guide 220 corresponds to the supporting trunk part 210, and has an opening through which the supporting member 400 passes. The supporting guide 220 guides the supporting member 400 to pass therethrough, and transfers the weight of the display from the supporting member 400 to the supporting case 200. According to one aspect, the supporting guide 220 has a bending part 221 extending

from a guiding flange with an opening that corresponds to the opening formed in the supporting guide 220.

[0033] According to one aspect, the supporting case 200 has a supporting bracket 230, a first bracket cover 240, and a second bracket cover 250. The supporting bracket 230 facilitates mounting the supporting case 200 on the base 100, and has: a seating flange 231, in which the supporting member 400 is seated; a first engaging hole 233, engaging the supporting bracket 230 with the supporting trunk part 210; and a second engaging hole 235, engaging the supporting bracket 230 with the seating part 120 of the base 100. Specifically, the supporting bracket 230 engages the lower end of the supporting trunk part 210 of the supporting case 200 through the first engaging hole 233. Then, the supporting case 200 engages the base 100 through the second engaging holes 235 after the supporting bracket 230 is inserted into the seating part 120 of the base 100. Since a diameter of the supporting bracket 230 is larger than an external diameter of the supporting trunk part 210, a portion of the supporting bracket 230 is exposed. The exposed portion is covered by the first and second bracket covers 240 and 250.

[0034] Referring to FIG. 3C, a trunk part 310 of the rotating case 300 has a hollow opening through which the supporting member 400 passes. The trunk part 310 is installed onto an upper part of the supporting case 200. Since the trunk part 310 rotates when installed on an upper part of the supporting case 200, according to one aspect, the trunk part 310 is approximately cylindrical.

[0035] A projection part 320 protrudes from an inner surface of the trunk part 310, and maintains a predetermined separation from an outer face of the supporting case 200.

A bracket-inserting opening 330 is an opening located on the first end of the trunk part 310, and through which the rotating case 300 engages the mounting bracket 500.

[0036] According to one aspect, the rotating case 300 additionally has an inserting guide 340. The external diameter of the inserting guide 340 corresponds to an internal diameter of the trunk part 310, and the internal diameter of the inserting guide 340 corresponds to an external diameter of the supporting trunk part 210. Thus, the lower part of the trunk part 310 is inserted onto the upper part of the supporting trunk part 210.

[0037] According to another aspect, the trunk part 310 additionally has a wire holder 311. The wire holder 311 is a protrusion that holds a plurality of wires connected to the display.

[0038] According to another aspect, the trunk part 310 additionally has a stopper 313. The stopper 313 projects farther from an inner face of the trunk part 310, than the projection part 320. According to yet another aspect, the stopper 313 is molded from an elastic material. Also, according to still yet another aspect, the trunk part 310 is spaced from the supporting trunk part 210 to absorb an impact and facilitate a molding operation.

[0039] Referring to FIG. 3D, a supporting member 400 has a supporting shaft 410 and a bracket-engaging part 420. The bracket-engaging part 420 on a first end of the supporting shaft 410 engages an engaging part 510 of the mounting bracket 500 see FIG. 3E). Thus, the bracket engaging part 420 and the engaging part 510 have corresponding shapes. According to one aspect, the bracket engaging part 420 is polygonal and the engaging part 510 has a corresponding polygonal recess. It will be

appreciated that the engaging part 510 may be polygonal, and the bracket engaging part 420 may have a corresponding polygonal recess.

[0040] As shown in FIG. 3E the, mounting bracket 500 has an engaging part 510, a mounting face 520, and a mounted hole 530. As previously noted, engaging part 510 engages the bracket-engaging part 420 located on the first end of the supporting shaft 410 of the supporting member 400. According to one aspect, the mounting face 520 is shaped like a plate, with a face having the mounted hole 530 on which the display is mounted.

[0041] According to one aspect, the mounting bracket 500 additionally has a cover 540 and an inserting part 550. The cover 540 covers a first end of the mounting bracket 500 to conceal the inside thereof.

[0042] The inserting part 550 is needed in the second embodiment described above. The inserting part 550 is a boss of predetermined thickness that corresponds to the bracket-inserting opening 330 of the rotating case 300. The boss is positioned between the engaging part 510 and the mounting face 520, and extends away from the first end of the mounting bracket 500. The inserting part 550 is inserted into the bracket-inserting opening 330.

[0043] As previously mentioned, substituting the cylinder part 600 for the supporting member 400 employed in the first, second, and third embodiments, creates fourth, fifth, and sixth embodiments. In the fourth, fifth, and sixth embodiments, the distance between the base and the display can be changed and the display can also be rotated.

[0044] Referring to FIG. 3F, cylinder part 600 has a cylinder cover 610, a cylinder 620 and a bracket-engaging part 630.

[0045] According to one aspect, cylinder 620 is a hydraulic cylinder filled with gas, such as air, and functions as a damping pot for translational movement of the cylinder part 600.

[0046] According to an aspect of the fourth embodiment, wherein the cylinder part 600 rotates, the bracket-engaging part 630 is polygonal. According to an aspect of the fifth and sixth embodiments, however, wherein the rotating case 300 rotates, the bracket-engaging part 630 is approximately cylindrical.

[0047] As shown in FIG. 3G, the display-mounting part 700 has a display base plate 710, a first engaging hole 720, a first engaging part 730, a second engaging part 740, and a second engaging hole 750.

[0048] According to the third and sixth embodiments, the display base plate 710 is shaped like a plate, and engages the mounting face 520 of the mounting bracket 500 through the first engaging hole 720 on the base plate 710 and the corresponding mounted hole 530. The first engaging part 730 and the second engaging part 740 are planar shaped wings located on opposite sides of the base plate 710, having the second engaging hole 750, through which the display is mounted to the display mounting part 700.

[0049] As shown in FIG. 4, according to the second, third, fifth, and sixth embodiments of the invention the supporting case 200 is inserted into the rotating case 300.

[0050] The rotating case 300 maintains a predetermined separation from the inserted supporting case 200, owing to the projection part 320 of the trunk part 310. This separation and the projection part facilitate smooth rotation of the rotating case 300. The predetermined angle through which the rotating case 300 rotates, is limited by the stopper 313 and the recess 213 of the supporting trunk part 210.

[0051] It will be appreciated that the stopper 313 could be located on the external surface of the supporting case 200, and the corresponding recess 213 could be located on the interior surface of the upper case 300.

[0052] According to one aspect of the second, third, fifth, and sixth embodiments of the invention, the penetrating pipe 211, through which the cylinder part 600 passes, is located inside the supporting trunk part 210.

[0053] Thus, the stand, according to the present invention, is capable of swiveling and changing the distance between the base and the display, while supporting the weight of a large-sized display, and needing no separate device for swiveling and changing the elevation of the display.

[0054] To illustrate how the stand works, the following is a description of how the stand functions according to the sixth embodiment. A display is mounted to the display mounting part 700 using the second engaging hole 750. The display can be rotated by supplying a force of predetermined magnitude to a side of the display. Since the display mounting part 700 engages the mounting bracket 500, which in turn engages the cylinder part 600 and the rotating case 300, the force applied to the side of the display is transferred to the rotating case 300, and results in rotation about the axis of the cylinder part 600. This rotation continues until the stopper 313 encounters a side of the recess 213 (see FIG. 4). Similarly, rotation of the display can occur in the opposite direction until the stopper 313 encounters an opposing side of the recess 213.

[0055] The elevation of the display can be changed by applying a force of predetermined magnitude to a top or a bottom of the display. For purposes of this example, the force is applied to the top of the display. The force is transferred from the display to the display mounting part 700, and in turn to the mounting bracket 500

and the cylinder part 600, as described previously. The force compresses the cylinder part 600, sliding the cylinder 620 into the cylinder cover 610, and changing the elevation.

[0056] Although a few embodiments of the present invention have been shown and described, it will be appreciated by those skilled in the art that changes may be made in these embodiments without departing from the principles and spirit of the invention, the scope of which is defined in the appended claims and their equivalents.